

REMARKS

The foregoing amendment amends claim 1. Pending in the application are claims 1, 2, 4 and 5, of which claim 1 is independent. The following comments address all stated grounds for rejection and place the presently pending claims, as identified above, in condition for allowance.

Claim 1 is amended to specify that a liquid sealant hardens while in close contact with both end faces of the first gas diffusion layer and the second gas diffusion layer to provide the seal. Support for the amendment can be found throughout the application as filed, at least, for example, on page 9, line 24 to page 10, line 18. *No new matter is added.*

Amendment and/or cancellation of the claims are not to be construed as an acquiescence to any of the objections/rejections set forth in the instant Office Action, and were done solely to expedite prosecution of the application. Applicants reserve the right to pursue the claims as originally filed, or similar claims, in this or one or more subsequent patent applications.

Double Patenting Rejection

Claims 1, 2, 4 and 5 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2 of U.S. Patent No. 6,699,613 as evidenced by Jones 6,007,933. Applicants respectfully submit that the claims of the present invention are patentably distinct from the claims of the '613 patent.

However, in order to expedite allowance of the present application, Applicants submit herewith a terminal disclaimer in compliance with 37 CFR 1.321(c), as requested by the Examiner. The terminal disclaimer disclaims the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term of a patent granted on U.S. Patent No. 6,699,613.

In view of the above, Applicant respectfully requests that the obviousness-type double patenting rejection of claims 1, 2, 4 and 5 be reconsidered and withdrawn.

Claim Rejections under 35 USC § 102

Claims 1, 2 and 4 are rejected under 35 U.S.C. 102(b) as being anticipated by Jones 6,007,933. Applicants respectfully submit that the pending claims 1, 2, and 4, are patentable over the cited Jones reference, and request that the rejection be reconsidered and withdrawn.

The Jones reference does not teach or suggest a fuel cell including a liquid sealant that hardens while in close contact with both end faces of first and second gas diffusion layers of the fuel cell to provide a seal, as recited in claim 1.

According to the Examiner, the recitation in the claims of “a seal, provided onto the separators, which was liquid sealant at the time of application” is interpreted as “a solid seal *per se*, because such limitation refers to the initial state of the liquid sealant at the time of application, but the final state (the working seal) of the seal is solid as the liquid sealant hardens into solid sealant...”.

However, the claimed seal is different from the solid gasket described in Jones for several reasons. Applicants respectfully note that an initially solid seal, such as the gasket of Jones, has dimensions and a shape that are determined before assembly of a membrane electrode assembly associated with the solid seal. Because the size and configuration of the seal is set *prior to* assembly, it is difficult to prepare a solid seal having accurate dimensions that is sized and configured to *precisely* fit to both ends of the first and second gas diffusion layers.

In contrast, the use of a seal formed of a liquid sealant that is liquid at the time of application allows for the resulting seal to have a size and shape that precisely matches the region of the fuel cell in which the seal is located. During formation of the seal, the liquid sealant comes into close contact with the membrane electrode assembly and hardens according to the size of the membrane electrode assembly, i.e., in compliance with the dimensions of the ends of the gas diffusion layers. While the gasket of Jones has a size, shape and configuration that are fixed during manufacture of the gasket, the claimed seal has a size, shape and configuration that can adjust according to the size, shape and configuration of the membrane electrode assembly being sealed. Thus, the seal of the present invention, which is liquid sealant at the time of application, has an advantage over a solid seal in that a precise dimension control, as required with a solid seal, can be dispensed with during manufacture of the seal. In addition, a close contact of the seal with the end faces of the gas diffusion layers can be accurately attained.

In particular, with a thin membrane electrode assembly in which electrolyte membranes and gas diffusion layers have a thickness on the order of a few hundred microns, it is extremely difficult to manufacture in advance a solid seal with precise dimensions and maintain a predetermined performance of the seal. An unevenness or error in thicknesses of the solid seals and in the positions of the end faces of the solid seals and the gas diffusion layers causes a deterioration in the sealing performance.

In contrast, the claimed seal, which is liquid sealant at the time of application, hardens *in compliance with* the thickness of the electrolyte membranes and the diffusion membrane, thus solving the problems that occur with solid seals that are not formed of a liquid sealant that is subsequently hardened while contacting gas diffusion layers of a fuel cell.

The JP 08-148169, also cited by the Examiner in the Office Action, does not compensate for the deficiencies of the Jones reference, because the JP '169 reference describes a fuel cell including a permanently solid O-ring gasket 15.

Claim Rejections under 35 USC § 103

Claim 5 is rejected under 35 U.S.C. 103(a) as being anticipated by Jones 6,007,933 as applied to claim 1 above, and further in view of Japanese publication JP 08-148169. As described above, independent claim 1, from which claim 5 depends, is patentable over the cited references. Therefore, claim 5, which includes all of the limitations of claim 1, is also patentable over the cited references.

In summary, because the cited references do not teach or suggest a fuel cell including a component provided on the separators that comprises a liquid sealant that hardens *while in contact with* gas diffusion layers of the fuel cell to form a seal, claims 1, 2, 4 and 5 are patentable.

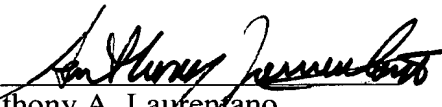
CONCLUSION

In view of the above amendment, applicants believe the pending application is in condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue. If, however, the Examiner considers that obstacles to allowance of these claims persist, we invite a telephone call to Applicant's representative.

An appropriate Petition for Extension of Time is being filed concurrently herewith. If any additional fees are due, please charge our Deposit Account No. 12-0080, under Order No. SIW-008RCE from which the undersigned is authorized to draw.

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Respectfully submitted,

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